

1. (Amended) An Fe-Ni-Co alloy whose chemical composition comprises, by weight based on total weight:

$$32\% \leq \text{Ni} \leq 34\%$$

$$3.5\% \leq \text{Co} \leq 6.5\%$$

$$0\% \leq \text{Mn} \leq 0.1\%$$

$$0\% \leq \text{Si} \leq 0.1\%$$

$$0\% \leq \text{Cr} \leq 0.1\%$$

$$0.005\% \leq \text{C} \leq 0.02\%$$

$$\text{S} \leq 0.001\%$$

$$0.0001\% \leq \text{Ca} \leq 0.002\%$$

$$0.0001\% \leq \text{Mg} \leq 0.002\%$$

and further comprising iron and impurities resulting from smelting; the chemical composition of the alloy furthermore satisfying the relationships:

$$\text{Co} + \text{Ni} \leq 38.5\%$$

$$\text{Co} + 0.5 \times \text{Ni} \geq 20\%$$

$$\text{Co} + 5 \times \text{Ni} \geq 165.5\%$$

and

$$\text{S} \leq 0.02 \times \text{Mn} + 0.08 \times \text{Ca} + 0.6 \times \text{Mg}$$

wherein said alloy has a martensitic transformation start point of less than -50°C , an average coefficient of thermal expansion between 20° and 100°C of less than or equal to $0.7 \times 10^{-6}/^{\circ}\text{K}$ and a mean coefficient of thermal expansion between 80°C and 130° of less than or equal to $1 \times 10^{-6}/^{\circ}\text{K}$.

7. (Amended) A shadow mask, which comprises at least one foil having holes, said foil comprising an alloy whose chemical composition comprises, by weight based on total weight:

$$32\% \leq \text{Ni} \leq 34\%$$

$$3.5\% \leq \text{Co} \leq 6.5\%$$

$$0\% \leq \text{Mn} \leq 0.1\%$$

$$0\% \leq \text{Si} \leq 0.1\%$$

$$0\% \leq \text{Cr} \leq 0.1\%$$

$$0.005\% \leq \text{C} \leq 0.02\%$$

$$\text{S} \leq 0.001\%$$

$$0.0001\% \leq \text{Ca} \leq 0.002\%$$

$$0.0001\% \leq \text{Mg} \leq 0.002\%$$

and further comprising iron and impurities resulting from smelting; the chemical composition of the alloy further satisfying the relationships:

$$\text{Co} + \text{Ni} \leq 38.5\%$$

$$\text{Co} + 0.5 \times \text{Ni} \geq 20\%$$

$$\text{Co} + 5 \times \text{Ni} \geq 165.5\%$$

and

$$\text{S} \leq 0.02 \times \text{Mn} + 0.08 \times \text{Ca} + 0.6 \times \text{Mg}$$

wherein said alloy has a martensitic transformation start point of less than -50°C , an average coefficient of thermal expansion between 20° and 100°C of less than or equal to $0.7 \times 10^{-6}/^{\circ}\text{K}$ and a mean coefficient of thermal expansion between 80°C and 130°C of less than or equal to $1 \times 10^{-6}/^{\circ}\text{K}$.

8. (Amended) A method of forming a shadow mask, comprising the steps of forming holes in a foil and drawing said hole-containing foil, wherein the foil comprises an alloy having a chemical composition which comprises, by weight based on total weight:

$$32\% \leq \text{Ni} \leq 34\%$$

$$3.5\% \leq \text{Co} \leq 6.5\%$$

$$0\% \leq \text{Mn} \leq 0.1\%$$

$$0\% \leq \text{Si} \leq 0.1\%$$

$$0\% \leq \text{Cr} \leq 0.1\%$$

$$0.005\% \leq \text{C} \leq 0.02\%$$

$$\text{S} \leq 0.001\%$$

$$0.0001\% \leq \text{Ca} \leq 0.002\%$$

$$0.0001\% \leq \text{Mg} \leq 0.002\%$$

and further comprising iron and impurities resulting from smelting; the chemical composition of the alloy further satisfying the relationships:

$$\text{Co} + \text{Ni} \leq 38.5\%$$

$$\text{Co} + 0.5 \times \text{Ni} \geq 20\%$$

$$\text{Co} + 5 \times \text{Ni} \geq 165.5\%$$

and

$$\text{S} \leq 0.02 \times \text{Mn} + 0.08 \times \text{Ca} + 0.6 \times \text{Mg}$$

wherein said alloy has a martensitic transformation start point of less than -50°C , an average coefficient of thermal expansion between 20° and 100°C of less than or equal to $0.7 \times 10^{-6}/^{\circ}\text{K}$ and a mean coefficient of thermal expansion between 80°C and 130°C of less than or equal to $1 \times 10^{-6}/^{\circ}\text{K}$.